

**NAVY TRAINING SYSTEM PLAN**  
**FOR THE**  
**AIR SURVEILLANCE AND PRECISION**  
**APPROACH RADAR CONTROL SYSTEM**

**N88-NTSP-A-50-0006/I**

**DECEMBER 2000**

**AIR SURVEILLANCE AND PRECISION  
APPROACH RADAR CONTROL SYSTEM**

**EXECUTIVE SUMMARY**

This Initial Navy Training System Plan (NTSP) for the Air Surveillance and Precision Approach Radar Control System (ASPARCS) was developed by the Naval Air Systems Command (AIR 3.4.1) using the Training Planning Process Methodology. This document provides an early estimate of the manpower, personnel, and training requirements to introduce and sustain the ASPARCS program. As the program matures, these requirements will be further defined in updates to this NTSP. ASPARCS is an Acquisition Category IVT program, currently in the Engineering and Manufacturing Development phase with first article production.

ASPARCS will replace the current Marine Air Traffic Control And Landing System (MATCALs), comprised of the AN/TSQ-131(V) Control and Communications Subsystem, the AN/TPS-73 Air Traffic Control Subsystem, and the AN/TPN-22 Automatic Landing Subsystem. The current system is reaching the end of its useful life and suffers from parts obsolescence and the increased life cycle costs of the system. In addition, the system's excessive size and weight makes it impractical in supporting current expeditionary Air Traffic Control (ATC) missions and is not interoperable with other ATC and Command and Control Systems. ASPARCS will provide the Marine Corps with a system that is light, highly mobile, affordable, and maintainable and will provide interfaces to national and international ATC systems. ASPARCS will be the Marine Air Traffic Control Detachment's (MATCD) primary means of detecting, identifying, tracking, and reporting on all Air Breathing Targets (ABT), defined as a manned aircraft, cruise missile, or an Unmanned Aerial Vehicle.

ASPARCS is being acquired in two phases. The first phase includes all core ATC components and will rely heavily on Non-Developmental Items (NDI) with modifications. The second phase incorporates interoperability with aviation command and control agencies and enhanced ATC functions to the Phase I systems. Operation and maintenance of ASPARCS will not require any additional manpower from those in the current MATCD Table of Organization. Military personnel will operate and maintain ASPARCS and will be supported using organizational to contractor depot level maintenance. The conduct of ASPARCS maintenance training at Naval Air Technical Training Center (NATTC) Pensacola will require a temporary increase to the schoolhouse Table of Organization (T/O) while both MATCALs and ASPARCS systems are taught during the transition.

The ASPARCS training program will consist of initial training for operator and maintenance personnel provided by the contractor. System operator training will readily merge with existing pipelines; maintenance training will readily merge with existing pipeline but will require rewrite of existing courses. Follow-on training will be conducted at existing Department of Defense or contractor facilities.

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**LIST OF ACRONYMS**

ABT	Air Breathing Target
ADC	Arrival and Departure Control
AMTCS	Aviation Maintenance Training Continuum System
ASPARCS	Air Surveillance and Precision Approach Radar Control System
ASR	Air Surveillance Radar
ATC	Air Traffic Control
BIT	Built-In Test
BITE	Built-In Test Equipment
CAC2S	Common Aviation Command and Control System
CBT	Computer-Based Training
CCS	Control and Communications Subsystem
CM	Corrective Maintenance
COTS	Commercial Off-The-Shelf
CS	Communications Subsystem
DoD	Department of Defense
DRASH	Deployable Rapid Assembly Shelter
ECU	Environmental Control Unit
FAA	Federal Aviation Administration
FC	Final Control
GENSET	Generator Set
GPSTOD	Global Positioning System Time-Of-Day
HMMWV-HV	High Mobility Multipurpose Wheeled Vehicle, Heavy Variant
ICAO	International Civil Aviation Organization
MACS	Marine Air Control Squadron
MATC	Marine Air Traffic Control
MATCALs	Marine Air Traffic Control And Landing System
MATCD	Marine Air Traffic Control Detachment
MATMEP	Maintenance Training Management and Evaluation Program

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**LIST OF ACRONYMS**

MATSG	Marine Aviation Training Support Group
MHE	Material Handling Equipment
MOS	Military Occupational Specialty
NATTC	Naval Air Technical Training Command
NAWCAD	Naval Air Warfare Center Aircraft Division
NDI	Non-Developmental Item
NTSP	Navy Training System Plan
OCU	Operations Control Unit
OEO	Other Expeditionary Operations
OJT	On-the-Job Training
OMFTS	Operational Maneuver From the Sea
OS	Operations Subsystem
PAR	Precision Approach Radar
PBL	Performance Based Logistics
PC	Personal Computer
PM	Preventive Maintenance
RU	Replacement Unit
SLEP	Service Life Extension Program
SOA	Statement of Work
SRD	Systems Requirement Document
STOM	Ship to Shore Maneuver
TBD	To Be Determined

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**PREFACE**

This Navy Training System Plan (NTSP) is a product of the Training Planning Process Methodology, as outlined in OPNAV Publication P-751-3-9-97, and is an early look at concepts and requirements for the Air Surveillance and Precision Approach Radar Control System (ASPARCS). This is the third iteration of the NTSP for the ASPARCS program, a minor update to the May 2000 version. This document explores the various employment and support alternatives currently under consideration. Since it is still relatively early in the acquisition process, some definitive data was unavailable for inclusion in this version.

### A. NOMENCLATURE-TITLE-PROGRAM

**2. Program Element.** 0604504N

1. System Characteristics .....	Unclassified
2. Capabilities .....	Unclassified
3. Functions.....	Unclassified

OPNAV Principal Official (OPO) Program Sponsor.....	CNO (N785)
OPO Resource Sponsor .....	CNO (N785)
Functional Mission Sponsor .....	CNO (N785)
Marine Corps Program Sponsor.....	CMC (APC-5)
Training Agency .....	CINCLANTFLT (N721) CINCPACFLT (N343) CNET (ETE321) MCCDC (C462)
Training Support Agency .....	NAVAIRSYSCOM (PMA205)
Manpower and Personnel Mission Sponsor .....	CNO (N12) CMC (ASM-1)
Director of Naval Training .....	CNO (N79)
Commander, Reserve Program Manager .....	COMNAVAIRESFOR
Marine Corps Force Structure .....	MCCDC (C53)

## **D. SYSTEM DESCRIPTION**

**1. Operational Uses.** The ASPARCS is a highly mobile Air Surveillance Radar (ASR), Precision Approach Radar (PAR), and Operations Subsystem and Communications Subsystem (OS/CS) that will be the Marine Air Traffic Control Detachment's (MATCD) primary means of detecting, identifying, tracking, and reporting on all Air Breathing Targets (ABT). ASPARCS will provide the MATCD with a real-time display of all air activity within the assigned area of responsibility and will be rugged enough to support a wide range of tactical operations in all types of weather and terrain conditions. ASPARCS will provide the speed and flexibility required for enhanced Air Traffic Control (ATC) capabilities in the execution of Operational Maneuver From The Sea (OMFTS), Ship To Objective Maneuver (STOM), Sustained Operations Ashore (SOA), and Other Expeditionary Operations (OEO). Once ashore ASPARCS will possess the mobility to keep pace with supported maneuver elements. As a secondary mission, ASPARCS will be capable of transmitting track information on targets detected within its coverage limits to designated command and control agencies. Additional missions will be those to support worldwide emergencies, disaster relief operations, and to serve as an interim replacement for shore-based Naval ATC systems during equipment upgrades and/or other Service Life Extension Program (SLEP) efforts.

**2. Foreign Military Sales.** No Foreign Military Sales (FMS) are planned at this time; however, the Joint Potential Designations are Joint Interest for the U.S. Army, U.S. Navy, and U.S. Air Force.

**E. DEVELOPMENTAL TEST AND OPERATIONAL TEST.** Qualification testing will be performed by the contractor to ensure that the system will meet all environmental, shock, vibration, and performance thresholds as defined in the Systems Requirement Document (SRD). The first article and production tests, plans, and procedures will be developed by the contractor. The contractor will conduct or direct testing necessary to establish the reliability and maintainability levels for the system. In lieu of actual first article testing, test data from the Non-Developmental Item (NDI) subsystems previously tested by Department of Defense (DoD) agencies may be accepted. At this time, the test schedule has not been determined.

**F. AIRCRAFT AND/OR EQUIPMENT/SYSTEM/SUBSYSTEM REPLACED.** ASPARCS will replace the current Marine Air Traffic Control And Landing System (MATCALS), comprised of the AN/TSQ-131(V) Control and Communications Subsystem, the AN/TPS-73 Air Traffic Control Subsystem, and the AN/TPN-22 Automatic Landing Subsystem. The MATCALS is reaching its service life limits. Advanced aircraft technologies and the need for lightweight, highly mobile radars and related command and control nodes have driven the requirement for significant upgrades to the current system.



## **G. DESCRIPTION OF NEW DEVELOPMENT**

**1. Functional Description.** The goal of the ASPARCS is to improve the current technology and efficiency of operations by enhancing the MATCD's capability to effectively detect, identify, track, and report on all ABTs. The ASPARCS will principally facilitate the safe and expeditious flow of air traffic during joint or combined operations. ASPARCS will consist of a highly mobile ASR, PAR, OS, and CS. All four subsystems will be mounted on and be capable of operating from a High Mobility Multipurpose Wheeled Vehicle, Heavy Variant (HMMWV-HV) with the OS and CS sharing an HMMWV-HV. In addition, each of the subsystems will be capable of removal from the HMMWV-HV without the use of Material Handling Equipment (MHE), and capable of operation while separated from the HMMWV-HV.

**a. Air Surveillance Radar.** The ASR will provide both primary radar coverage and secondary Identification Friend or Foe (IFF) coverage. The ASR is required to provide for the vectoring of aircraft and for the conduct of surveillance approaches. The ASR will be provided with a Personal Computer (PC) Maintenance Port for the purpose of initiating and observing the results of ASR, Built-In Test (BIT) or Built-In Test Equipment (BITE), and diagnostic tests.

**b. Precision Approach Radar.** The PAR will provide a precision approach capability. The PAR will provide 3-D information (azimuth, elevation, and range) on all ABTs within the prescribed scan area and provide a capability for servicing up to three intersecting runways, but only one direction at a time. The PAR will operate in a frequency range currently approved for U.S. military ATC radar systems.

**c. Operations Subsystem.** The OS will employ Digital Information Link (during Phase II) Message Standard in order to forward specified targets and track data, to include a target tagging feature and symbology configuration that is compatible with higher and adjacent air command and control agencies. The control software will provide multiple display modes to accommodate the various aspects of ATC. The software provided will include an ASR display package currently in use or Federal Aviation Administration (FAA)/DoD-certified for use at an operational site by FAA-licensed Air Traffic Controllers, and include all the functions available at that site.

**d. Communications Subsystem.** The CS will provide the communications equipment necessary to perform safe ATC as well as communicate with all appropriate military and civilian agencies.

**2. Physical Description.** ASPARCS is currently in the Engineering and Manufacturing Development Phase of the acquisition process. The acquisition strategy requires heavy reliance on a NDI tactical ATC system. The physical design for the OS and CS is in the very early stages. The current Naval Air Warfare Center Aircraft Division (NAWCAD) combined design calls for a single HMMWV-HV with a mounted rigid shelter, and a Deployable Rapid Assembly Shelter (DRASH) five tent serviced by a trailer with Generator Set (GENSET) and Environmental Control Unit (ECU). The majority of the CS equipment will be mounted within the shelter and

the majority of the OS equipment will be mounted in transit cases. During normal operation, the transit-cased equipment will be set up and operated within the tent. During transport, the transit cases will be stowed within the shelter or on the OS-CS trailer. The design of the CS requires a Global Positioning System Time-Of-Day (GPSTOD) distribution subsystem for the radios and audio recorder. The OS-CS design will also include a GPSTOD distribution capability inside the OS tent. The OS will include a DRASH capable of housing four to eight control stations and one to two supervisor stations. Further information on physical description or design modifications will be updated in this NTSP as the design develops.

**3. New Development Introduction.** The ASPARCS will be acquired in two phases. The first phase includes all core ATC components and will be a NDI with modifications. The second phase incorporates interoperability with aviation command and control agencies and enhanced ATC functions to the Phase I systems.

**4. Significant Interfaces.** ASPARCS will interface with FAA interfaces and International Civil Aviation Organization (ICAO) for handoff, handover, and flight plans in order to perform airspace control functions for military and civilian aircraft. It will also interface with the Common Aviation Command and Control System (CAC2S). In addition, it will be adaptable to standard Marine Corps HMMWV-HV.

**5. New Features, Configurations, or Material.** The ASPARCS will develop and integrate emerging technologies in order to provide a more lightweight, highly mobile radar and related command and control nodes. It will offer a significantly reduced footprint compared to the MATCALS. It will also support the National standards for interoperability with FAA and ICAO ATC systems within the areas of National Airspace Systems (NAS) interface, target conflict alert and resolution, automated target handoff and handover, weather display, and aircraft flight plans.

## **H. CONCEPTS**

**1. Operational Concept.** The ASPARCS will be operated by MATCD personnel to provide ATC capabilities. Two Marines will be assigned to set up each subsystem to the basic operational mode level and to the full operational mode level. The ASR Marines will be responsible for setting up the ASR radar and set up of their end of the OS-ASR interface. The PAR Marines will be responsible for setting up the PAR radar and their end of the OS-PAR interface. The OS Marines will be responsible for setting up all OS components, minus the Operations Control Units (OCU), and will have the primary responsibility for set up of the DRASH. The CS Marines will be responsible for setting up all CS components including the OCUs and antennas. Military Occupational Specialty (MOS) 72XX Air Traffic Controllers will man and utilize the ASPARCS in the execution of ATC missions.

**2. Maintenance Concept.** The maintenance concept for the ASPARCS, less the HMMWV-HV transport vehicles, will be consistent with that for existing MATCALS systems and equipment. Maintenance of the ASPARCS components will be accomplished through the use

of an organizational to contractor depot level concept. Its intent is to minimize the requirements for organizational corrective maintenance to allow Marine maintainers to service and sustain the ASPARCS as far forward in the battle area as possible, without having to rely on depot or contractor support. This will be accomplished using common tools and general purpose test equipment to the maximum extent. ATC Radar Technicians (MOS 5953) and ATC Communications Technicians (MOS 5954) will maintain the ASPARCS. The contractor will provide a Performance Based Logistics (PBL) program and function as the Government commercial stocking point. The PBL program is a commercial depot concept that is intended to be the supply support of ASPARCS.

**a. Organizational.** Organizational level maintenance skill levels required to maintain ASPARCS will not exceed qualifications of MOSs required to support MATCALS. Organizational level maintenance will include Preventive Maintenance (PM) and limited Corrective Maintenance (CM). Corrective maintenance will consist of BIT fault isolation, removal and replacement of failed modules and components, and system functional testing.

**(1) Preventive Maintenance.** PM will be performed at the organizational level and will consist of adjustments, alignments, inspection, lubrication, cleaning, and other tasks required to ensure continued operation of the ASPARCS.

**(2) Corrective Maintenance.** Corrective maintenance will consist of diagnosing and isolating a malfunction to the faulty lowest replaceable unit, removing and replacing subassemblies and piece parts, performance of subassembly and/or subsystem adjustments and alignments as necessary, and verification that the malfunction has been corrected. Organizational level CM will also include removal of flexible cables; removal and installation of special connectors, eyelets and terminals; repairs of minor damage to any shelter walls; repair and replacement of doors, hinges, electrical motors and accessories; and repair of broken or severed fiber-optic cable.

**b. Intermediate.** Current planning indicates that there will be no intermediate level maintenance required for the ASPARCS.

**c. Depot.** The original equipment manufacturer or an authorized repair station will perform depot level maintenance. Depot level maintenance will consist of repair, rework, and overhaul of the replaceable assemblies that are beyond the repair capability of the organizational level. The contractor will be responsible for the repair or replacement of all failed Replaceable Units (RU) that are provisioned and will be requisitioned by the Fleet.

**d. Interim Maintenance.** Current planning does not indicate the use of interim maintenance.

**e. Life Cycle Maintenance Plan.** The Life Cycle Maintenance Plan (LCMP) for ASPARCS and associated equipment utilizes a five-year management concept, as outlined in NAVELEX INST 5450.16B, dated February 24, 1983. It is one of the missions of the

ASPARCS to serve as an interim replacement for shore-based Naval ATC systems during equipment upgrades and/or other SLEP efforts.

**3. Manning Concept.** Operation and maintenance of the ASPARCS will not require any additional manpower from the levels currently assigned in the MATCD Table of Organization. Air Traffic Controllers (MOS 72XX) will man and utilize the ASPARCS in the execution of the ATC mission. ATC Radar Technicians (MOS 5953), and ATC Communications Technicians (MOS 5954) will maintain the ASPARCS at the organizational level. The maintainers have no air traffic controller-specific MOS 72XX responsibilities. Support personnel manning requirements are for Electricians, MOS 1142; Refrigeration Mechanics, MOS 1161; and Engineer Equipment Mechanics, MOS 1341.

**a. Estimated Maintenance Man-Hours per Operating Hour.** Requirements for the ASPARCS components (exclusive of the HMMWV-HV transport vehicles) are based on a mission duration of 24 hours. The technical parameter threshold values derived from the Systems Requirements Document for system reliability, availability, and repair time are as follows:

PARAMETER	DEFINITION	THRESHOLD	OBJECTIVE
System Reliability	Mean Time Between Operational Mission Failures	720 hours	1440 hours
System Availability	Uptime / (Uptime + Downtime) (percent of uptime usage)	95%	98%
Operational Mission System Maintainability	Mean Corrective Maintenance Time for Operational Mission Failures	25 minutes	15 minutes

No maintenance adjustments or alignments, and no planned maintenance will be required to be performed for a period of 120 hours of continuous operation, 24 hours per day. Assuming the ASPARCS thresholds above are attained, the system will not generate a need for additional maintenance personnel.

**b. Proposed Utilization.** The ASPARCS will be assigned to the MATCD to provide ATC capabilities from ship to shore missions. The system will complement the Naval ATC systems at sea. Once ashore, ASPARCS will possess the mobility required to keep pace with supported maneuver elements.

**c. Recommended Qualitative and Quantitative Manpower Requirements**

**(1) Operators.** Air Traffic Controllers (MOS 72XX) will man and utilize the ASPARCS in the execution of ATC missions.

**(2) Maintainers.** ATC Radar Technicians (MOS 5953) and ATC Communications Technicians (MOS 5954) will maintain the ASPARCS at the organizational level in accordance with OPNAVINST 4790.XX. The maintainers have no air traffic controller-specific MOS 72XX responsibilities. Support personnel manning requirements are for Electricians (MOS 1142), Refrigeration Mechanics (MOS 1161), and Engineer Equipment Mechanics (MOS 1341).

**4. Training Concept.** The contractor will establish a training program and conduct operational and maintenance training prior to first article delivery and prior to the delivery of the first production unit. These training programs will be conducted at the contractor's facility or at Government-approved facilities. These programs will ensure the transfer of required knowledge and skills to Government maintenance personnel, training instructors, and developmental and operational test and evaluation personnel. System operator and maintainer training must readily merge with existing training pipelines, with reduced or like overall training times required. A systems approach may be applied in the development and preparation of a training program that will provide designated operation and maintenance personnel with the necessary knowledge and skills to support ASPARCS.

The MATCALS formal training courses established at Naval Air Technical Training Command (NATTC) Pensacola, Florida, would transition to ASPARCS equipment. Personnel selected by Headquarters, Marine Corps for MOS 72XX Air Traffic Controllers and MOS 59XX Marine Air Traffic Control (MATC) maintenance personnel will be trained in these courses to maintain and operate ASPARCS and its associated equipment. The ASPARCS will operate as part of the Marine Air Command and Control System (MACCS); therefore, specialized training may be required to support inter-agency operability incorporated into existing courses, reducing the necessity for new course development.

Personnel from the Marine Forces Reserve Air Traffic Control Detachments are provided a limited number of student billets in both the controller and maintenance courses.

**a. Initial Training.** The contractor will provide initial training of the ASPARCS equipment (ASR, PAR, OS, and CS) for radar technicians, radar instructors, communications technicians, communications instructors, operators, and civilian personnel.

**b. Follow-on Training**

**(1) Air Traffic Controller Training.** Air Traffic Controller training is conducted at NATTC Pensacola. Basic Air Traffic Controller trainees receive instruction in the *Air Traffic Controller A1 Course, C-222-2010*. Officers and enlisted personnel receive 16 weeks of training. The trainees receive basic skills and knowledge required to perform routine duties in the control and handling of aircraft in a tower or radar environment.

Upon successful completion of the *Air Traffic Controller A1 Course*, Basic Air Traffic Controller trainees (MOS 7251) will receive instruction on the operation of ASPARCS equipment. Marine controllers attend this course in lieu of the Navy carrier

familiarization course at the end of the Air Traffic Controller Course. The *MATCALS Operator (Basic) Course, C-222-2021*, is currently two days in length and provides MATC personnel with familiarization training on the MATCALS following entry level schooling. This course will transition to ASPARCS equipment.

Trainees are then assigned to an ATC Facility, (or a Marine Air Control Squadron (MACS) for reservists assigned to the 4th Marine Aircraft Wing). At their assigned duty station, enlisted personnel receive further training through On-the-Job Training (OJT) on Radar Final Control and Radar Flight Data or Ground Control and Tower Flight Data. Once qualified, trainees are then awarded their Primary MOS 7257, Air Traffic Controller. Additional training through OJT is then required to become qualified for MOS 7252, Air Traffic Controller-Tower; and MOS 7253, Air Traffic Controller-Radar. Once qualified on Radar Final Control and Ground Control through OJT, officers are awarded MOS 7220, ATC Officer. Selected Air Traffic Controllers (MOS 7253) return to NATTC Pensacola for training in *Advanced Radar ATC, C-222-2022*. This phase of training provides students with the skill and knowledge to perform at a basic level as a Radar Approach Controller at all operating positions at a Radar Approach Control Facility and become qualified for MOS 7254.

Additional advanced training for senior MATC personnel is the *MATCALS Advanced Operator Course, C-2G-2018*, which provides comprehensive training on the employment and operation of MATCALS. Students receive instruction on the operation, capabilities, and limitations of the MATCALS. Students are also instructed on developing and designing United States Standard Terminal Instrument Procedures. This course will transition to ASPARCS equipment.

The following courses have been established specifically for MATCALS operator training, and will transition to ASPARCS operator training:

<b>Title .....</b>	<b>MATCALS Operator</b>
CIN .....	C-222-2021
Model Manager ..	NATTC Pensacola
Description .....	This course provides training to provide Marine Air Traffic Controllers with entry level knowledge and skills needed to operate the MATCALS equipment. This knowledge will enable them to become familiar with MATCALS equipment and to perform basic Marine Air Traffic Control functions in a tactical environment.
Location .....	NATTC Pensacola
Length .....	5 days
RFT date .....	Currently available
Skill identifier .....	None

TTE/TD ..... Various MATCALS subsystems and equipment  
 Prerequisite ..... C-222-2010, Air Traffic Controller Class A1

**Title ..... MATCALS Advanced Operator Course**  
 CIN ..... C-2G-2018  
 Model Manager .. NATTC Pensacola  
 Description ..... This course provides senior Marine Air Traffic Control personnel with comprehensive training on the employment and operation of MATCALS and the development of Terminal Instrument Approach Procedures. Students will perform tasks at an ATC Chief level in an expeditionary environment during tactical conditions.  
 Location ..... NATTC Pensacola  
 Length ..... 26 days  
 RFT date ..... Currently available  
 Skill identifier ..... None  
 TTE/TD ..... Various MATCALS subsystems and equipment  
 Prerequisites ..... ° C-222-2021, MATCALS Operator  
    ° E-5 and above

**(2) Maintenance Training.** MATC maintenance training is conducted at NATTC Pensacola. Students must complete a series of prerequisite training prior to attending the MATC maintenance courses: *C-100-2020, Avionics Common Core Class A1*; and *C-100-2017, Avionics Technician I Level*. After successful completion of these courses, trainees attend one of the two technician pipelines: *C-103-2080, MATC Radar Technician Pipeline* or *C-103-2090, MATC Communications Technician Pipeline*. Additionally, there is a supervisor and manager pipeline, *C-103-2110, MATCALS Maintenance Management and System Analysis Pipeline*. These pipelines will transition from MATCALS to ASPARCS. Marines may return to NATTC Pensacola to receive initial or refresher training in a segment of the pipeline they had not previously attended, providing sufficient student seats are available.

**Title .....** **MATC Radar Technician Pipeline**

**CIN .....** C-103-2080

**Model Manager ..** NATTC Pensacola

**Description .....** This pipeline provides general knowledge and skills to perform preventive and corrective maintenance on the MATC radar equipment. This pipeline consists of five courses including:

- C-103-2026, Miniature Component Repair Class M3
- C-103-2072, MATC Technician Common Core Course
- C-103-2081, AN/TPN-22 PAR
- C-103-2084, AN/TPS-73 ASR
- C-103-2083, AN/UYQ-34 (V) 2 PDS

Upon completion, the student will be able to perform as a MATC Radar Technician in a MACS under supervision.

**Location .....** NATTC Pensacola

**Length .....** 213 days (232 days beginning in first quarter FY01)

**RFT date .....** Currently available

**Skill identifier .....** MOS 5953

**TTE/TD .....**

- AN/TPN-22 PAR
- AN/TPS-73 ASR
- AN/UYQ-34(V)2 PDS

**Prerequisites .....**

- C-100-2017, Avionics Technician I Level
- C-100-2020, Avionics Common Core Class A1



<b>Title .....</b>	<b>MATC Communications Technician Pipeline</b>
CIN .....	C-103-2090
Model Manager ..	NATTC Pensacola
Description .....	<p>This pipeline provides general knowledge and skills to perform preventive and corrective maintenance on the MATC communications equipment. This pipeline consists of six courses including:</p> <ul style="list-style-type: none"> <li>◦ C-103-2026, Miniature Component Repair</li> <li>◦ C-103-2072, MATC Technician Common Core Course</li> <li>◦ C-103-2091, MATCALS Radios Maintenance Course</li> <li>◦ C-103-2092, AN/TSQ-120A/B ATC Towers</li> <li>◦ C-103-2093, AN/TSQ-131 (V) Command and Control Subsystem (CCS)</li> <li>◦ C-103-2094, Remote Landing Site Tower</li> </ul> <p>Upon completion, the student will be able to perform as a MATC Communications Technician in a MACS under supervision.</p>
Location .....	NATTC Pensacola
Length .....	137 days (169 days beginning in first quarter FY01)
RFT date .....	Currently available
Skill identifier .....	MOS 5954
TTE/TD .....	<ul style="list-style-type: none"> <li>◦ AN/GRC-171(V) Radio Set</li> <li>◦ AN/GRC-211 Radio Set</li> <li>◦ AN/URC-94(V)2 Radio Set</li> <li>◦ AN/TSQ-120A/B ATCC Tower equipment</li> <li>◦ AN/TSQ-131(V) CCS</li> </ul>
Prerequisites .....	<ul style="list-style-type: none"> <li>◦ C-100-2017, Avionics Technician I Level</li> <li>◦ C-100-2020, Avionics Common Core Class A1</li> </ul>

**Title .....** **MATCALs Maintenance Management and System Analysis Pipeline**

**CIN .....** C-103-2110

**Model Manager ..** NATTC Pensacola

**Description .....** This pipeline provides career MATC Technicians, Maintenance Officers, ATC Officers, and Maintenance Chiefs with advanced technical training to improve their skills and abilities in the performance of maintenance management, maintenance training, and supervision of an expeditionary ATC detachment. This pipeline consists of two courses including:

- C-103-2111, Maintenance Management Course
- C-103-2112, MATCALs System Analysis Course

Upon completion, the student will be able to manage all facets of the operation and repair of the MATCALs System in a MACS.

**Location .....** NATTC Pensacola

**Length .....** 39 days

**RFT date .....** Currently available

**Skill identifier .....** None

**TTE/TD .....** Not Applicable (NA)

**Prerequisites .....** ◦ MOS 5950, 5953, 5954, or 5959; Paygrades E-6 through E-8 or W-1 and W-2  
or  
◦ MOS 5902 or 7220, Paygrades O-1 through O-3

### c. Student Profiles

<b>SKILL IDENTIFIER</b>	<b>PREREQUISITE SKILL AND KNOWLEDGE REQUIREMENTS</b>
7220, 7252, 7253, 7257	◦ C-222-2010, Air Traffic Controller Class A1
7254	◦ C-222-2010, Air Traffic Controller Class A1 ◦ C-222-2022, Advanced Radar Air Traffic Control
5953, 5954	◦ C-100-2020, Avionics Common Core Class A1 ◦ C-100-2017, Avionics Technician I Level

**d. Training Pipelines.** All Marine Air Traffic Controller and ATC maintenance training, including ASPARCS, will be conducted at NATTC Pensacola.

## **I. ONBOARD (IN-SERVICE) TRAINING**

**1. Proficiency or Other Training Organic to the New Development.** Onboard training at the MACS consists of controller qualification and proficiency training and maintenance technical training programs. These systematic training programs are conducted by senior squadron personnel to ensure a high state of operational readiness of the squadron. This is accomplished by maintaining and improving the efficiency and technical expertise of MACS controllers and maintenance personnel within their MOSs. This training consists of classroom instruction and “hands-on” practical application with the supervision of qualified personnel. In addition, individual OJT can be accomplished with the use of audio-visual aids, technical manuals, and Planned Maintenance System documentation. The Marine Wing Communications Squadron, Marine Air Control Group, or qualified squadron personnel provide training on operational use for communications security equipment.

**a. Air Traffic Controllers.** The existing pipeline contains a Training Mode for Air Traffic Controllers that provides scenarios closely resembling those of the Arrival and Departure Control (ADC) and Final Control (FC) displays. Instructor sub-modes provide the capability to generate simulated radar targets and to control them so that their behavior can be made to resemble a live radar target. The trainee sub-modes provide the same display and entry capabilities as the corresponding operator modes (ADC or FC) and allows the controller to exercise those capabilities on the simulated targets. This training should be transitioned as relevant to ASPARCS equipment.

**b. In-the-Field Controller.** An annual In-the-Field Controller Training Program is presented by In-Service Engineering Activity (ISEA) at selected ATC Detachment sites. This course provides familiarization training on the MATCALS to personnel who are new to the field, or who have been stationed away from the ATC Detachments. This program should be transitioned to ASPARCS personnel.

**c. Marine Air Traffic Controller Maintenance.** ISEA is responsible for developing and providing Training Devices and Technical Training Equipment for maintenance training on the MATC systems and equipment. ISEA coordinates with NATTC Pensacola and the MACS to determine the requirements for OJT on MATC systems and equipment.

**d. On-Site Maintenance.** The In-Service Engineering Activity (ISEA) for MATC systems and equipment will provide on-site maintenance instruction for ATC Detachment personnel, if required.

**e. Annual Training Schedule.** The quarterly MATC newsletter, published by SPAWARSSYSCEN, provides the annual training schedule for MATC maintenance and seat availability for Fleet Marine Force refresher training, as well as initial training for new systems.

**f. Aviation Maintenance Training Continuum System.** The Aviation Maintenance Training Continuum System (AMTCS) will provide career path training to the Sailor or Marine from their initial service entry to the end of their military career. AMTCS is planned to be an integrated system that will satisfy the training and administrative requirements of both the individual and the organization. The benefits will be manifested in the increased effectiveness of technicians and the increased efficiencies of management of the training business process. By capitalizing on technological advances and integrating systems and processes where appropriate, the right amount of training can be provided at the right time, thus meeting the CNO's mandated "just-in-time" training approach.

Technology investments enable the development of several state-of-the-art training and administrative tools: Computer-Based Training (CBT) for the technicians in the Fleet in the form of Interactive Courseware (ICW) with Computer-Managed Instruction (CMI) and Computer-Aided Instruction (CAI) for the schoolhouse.

Included in the AMTCS development effort is the AMTCS Software Module (ASM) which provides testing [Test and Evaluation (TEV)], recording [Electronic Training Jacket (ETJ)], and a Feedback system. The core functionality of these AMTCS tools are based and designed around the actual maintenance-related tasks the technicians perform, and the tasks are stored and maintained in a Master Task List (MTL) data bank. These tools are procured and fielded with appropriate Commercial Off-The-Shelf (COTS) hardware and software, i.e., Fleet Training Devices (FTD) Laptops, PCs, Electronic Classrooms (ECR), Learning Resource Centers (LRC), operating software, and network software and hardware.

Upon receipt of direction from OPNAV (N889H), AMTCS is to be implemented and the new tools integrated into the daily training environment of all participating aviation activities and supporting elements. AMTCS will serve as the standard training system for aviation maintenance training within the Navy and Marine Corps, and is planned to supersede the existing Maintenance Training Improvement Program (MTIP) and Maintenance Training Management and Evaluation Program (MATMEP).

## **2. Personnel Qualification Standards. NA**

**3. Other Onboard or In-Service Training Packages.** MATMEP is under consideration for terminating its use in the MATCALS program. Since onboard training packages are already in use, no replacement in-service training program has been identified to replace MATMEP at this time. Future updates to this NTSP will include any decisions concerning Marine Corps in-service training.

## **J. LOGISTICS SUPPORT**

### **1. Manufacturer and Contract Numbers**

<b>CONTRACT NUMBER</b>	<b>MANUFACTURER</b>	<b>ADDRESS</b>
N0019-00-C-0340	Lockheed Martin Corporation Naval Electronics and Surveillance Systems	6417 Deere Road Syracuse, NY 13206

### **2. Program Documentation.** The following documents are available for this system:

- Operational Requirements Document (ORD) for ASPARCS dated 12 June 2000
- SRD for ASPARCS dated 21 September 1999
- Statement of Objectives (SOO) for ASPARCS dated 1 October 1999
- MATCALs NTSP dated November 1999

**3. Technical Data Plan.** Preliminary operator and maintainer manuals will be required, as well as final operation and maintenance manuals with illustrated parts breakdown that will be prepared by NAWCAD 3.1.4.1. Manuals will be developed in accordance with Technical Manual Contract Requirement generated by the Naval Air Technical Data and Engineering Service Command. The formal technical manuals will be ready for printing and distribution approximately 90 days after receipt of verification of comments. Commercial manuals will be used where applicable.

**4. Test Sets, Tools, and Test Equipment.** Tools and test equipment will be selected from Marine Corps common tools and general purpose test equipment listed in the current editions of General Purpose Electronic Test Equipment (GPETE) where possible. Metric or American Standard hardware must be used in the system, but not both. Special Purpose Electronic Test Equipment or Special Tools, if required for maintenance of the system at the organizational level, will be provided as part of the system and be supported by the contractor.

### **5. Repair Parts.** TBD

**6. Human Systems Integration.** The Human Systems Integration (HSI) program will be organized to achieve the effective integration of personnel into the design of the system. The human engineering effort will include but not necessarily be limited to active participation in the following three major interrelated areas of system development: analysis, design and test, and evaluation. The use of NDI, COTS, and Government Off-The-Shelf hardware, software and firmware common to other systems should not require new personnel specialties, but rather an extension of the skill levels. Further, the use of highly reliable, integrated common support systems should result in the more efficient use of operating and support personnel.

## **K. SCHEDULE**

### **1. Installation and Delivery Schedules**

<b>LOCATION</b>	<b>YEAR</b>
NAWCAD Patuxent River (First Article)	2002
NATTC Pensacola	2003
MACS-1 MCAS Miramar	2003
NATTC Pensacola	2004
MACS-1 Det B, San Diego	2004

**2. Ready For Operational Use Schedule. TBD**

**3. Time Required to Install at Operational Sites. TBD**

**4. Foreign Military Sales and Other Source Delivery Schedule. NA**

**5. Training Device and Technical Training Equipment Delivery Schedule. TBD**

## **L. GOVERNMENT-FURNISHED EQUIPMENT AND CONTRACTOR-FURNISHED EQUIPMENT TRAINING REQUIREMENTS. TBD**

## **M. RELATED NTSPs AND OTHER APPLICABLE DOCUMENTS**

<b>DOCUMENT OR NTSP TITLE</b>	<b>DOCUMENT OR NTSP NUMBER</b>	<b>PDA CODE</b>	<b>STATUS</b>
Marine Air Traffic Control And Landing System (MATCALs) NTSP	N88-NTSP-A-50-9804/D	PMA2134	Draft Nov 99

## APPENDIX A - POINTS OF CONTACT

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